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Geosmithia tibetensis sp. nov. and new *Gibellulopsis* and *Scopulariopsis* records from Qinghai-Tibet

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Abstract — A new *Geosmithia* species and new records of *Gibellulopsis nigrescens* and *Scopulariopsis canadensis* are described and illustrated from the Qinghai-Tibet Plateau Area, China. Specimens (dried cultures) and living cultures are deposited in the Herbarium of Shandong Agricultural University, Plant Pathology (HSAUP). Duplicates are kept in the Herbarium of Institute of Microbiology, Academia Sinica (HMAS).

Key words — dematiaceous hyphomycetes, soil fungi, taxonomy

Introduction

During a survey of soil dematiaceous hyphomycetes in China, several unusual species with phialidic conidia were isolated. One represents a new species and the others new records for China.

We describe as new *Geosmithia tibetensis,* which is illustrated from cultures grown on Czapek yeast extract agar (CYA; Pitt & Hocking 1985). *Geosmithia,* established by Pitt (1979), is characterized by asexual penicillate fruiting structures, typically with entirely rough-walled elements. The conidiogenous cells are cylindrical phialides. Conidia, which form in long chains, are smooth, ellipsoidal or subspherical, 0-septate, and hyaline to pale brown. Index Fungorum (2012) listed 19 taxa, and while Seifert et al. (2011) estimated that the genus might contain 18 valid species.

Gibellulopsis, established by Batista & Maia (1959), is characterized by subulate phialides and conidia that are hyaline and ellipsoidal to short-cylindrical. Chlamydospores are formed abundantly. Seifert et al. (2011) stated that the genus contains only one valid species. *Scopulariopsis,* established by

Bainier (1907), is characterized by penicillate conidiophores bearing cylindrical annellides, and conidia are elongate, ovate, or mitriform, hyaline to pale buff in mass. Although Index Fungorum (2012) listed 102 taxa (many infraspecific), Seifert et al. (2011) estimated that the genus may contain only 25 valid species.

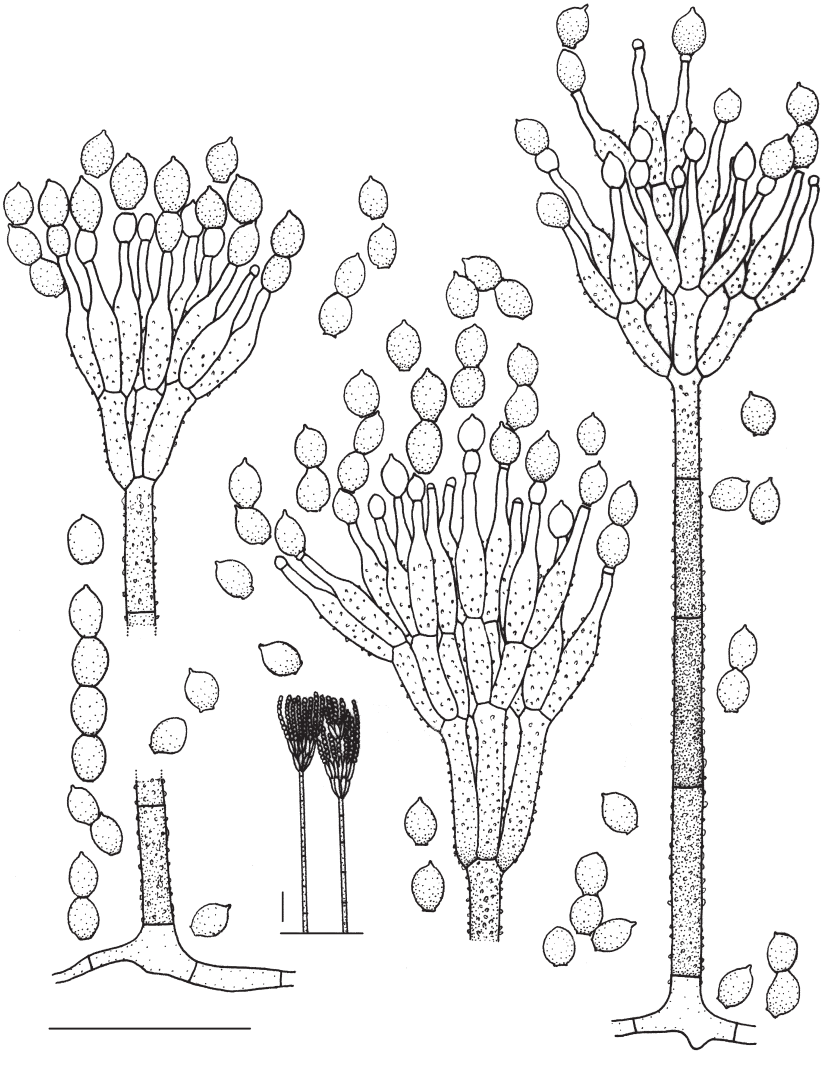

Fig. 1. *Geosmithia tibetensis* (ex holotype HSAUP II $_{07}$2000).
Conidia, conidiophores, and conidiogenous cells. Scale bars = 25 μm.

Geosmithia tibetensis Y.M. Wu & T.Y. Zhang, **sp. nov.** Fig. 1

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Differs from *Geosmithia fassatiae* by its larger conidia and phialidic conidiogenous cells without a distinct collar around the apical pore and from *G. lavendula* by its larger and paler brown conidia and moderately brown conidiophores.

Type: China, Tibet: Jiangzi, from a grassland soil, altitude 4100 m, 11 Sept. 2007, Y.M. Wu (**Holotype** HSAUP II $_{07}$2000; **isotype** HMAS 196275).

Etymology: in reference to the type locality.

Colonies on CYA effuse, velvety, pale yellow-brown, Mycelium superficial or immersed, hyphae branched, septate, smooth, subhyaline to light brown, 2–3 μm wide. Conidiophores light brown, hyaline towards the apex, macronematous, mononematous, solitary, erect, septate, conspicuously to finely roughened, 60–80 μm long, 3–4 μm wide, penicillate, terminally bearing a small number of elements, typically monoverticillate to biverticillate, verrucose, 6–15 × 3–5 μm. Conidiogenous cells phialides, terminal, verrucose, hyaline, cylindrical, clavate or obclavate, 8–20 × 3–5 μm. Conidia smooth, ellipsoidal to oblong, pale brown, often distinctly pointed apex, with a subtruncate base, adhering in chains, 0-septate, 4.5–6 × 3–4.2 μm.

Comments – Morphologically, *G. tibetensis* resembles *G. fassatiae* M. Kolařík et al. (Kolařík et al. 2005) and *G. lavendula* (Raper & Fennell) Pitt (Pitt 1979), but *G. fassatiae* has smaller conidia (3.5–4.5 × 2.5–3 μm) and conidiogenous cells often with a distinct collar around the apical pore, while *G. lavendula* has smaller, hyaline conidia (4.0–5.5 × 2.0–2.5 μm).

Gibellulopsis nigrescens (Pethybr.) Zare, W. Gams & Summerb., Nova Hedwigia 85: 477 (2007) Fig. 2

Colonies on PDA effuse, dark grey, velvety. Mycelium superficial or immersed, hyphae branched, septate, smooth, hyaline to pale brown, 2–3 μm wide. Conidiophores smooth, pale brown, hyaline towards the apex, macronematous, mononematous, solitary or in groups, erect, septate, 180–230 μm long, 2.5–3.5 μm wide. Conidiogenous cells phialidic, smooth, hyaline, clavate or subulate, 20–45 × 1.5–2.5 μm. Conidia smooth, ellipsoidal to ovate, hyaline, often in chains, 0-septate, 4–6 × 1.5–2.5 μm. Chlamydospores abundant.

Specimen examined: **China**. **Tibet**: Xigaze, from a forest soil, altitude 3100 m, 11 Sept. 2007, Y.M. Wu (HSAUP II $_{07}$1082, HMAS 196276).

Gibellulopsis nigrescens is reported for the first time from China. Compared with the morphological characters of the species as described by Zare et al. (2007), both have hyaline conidia that are smooth, ellipsoidal to short-cylindrical, 0-septate, often in chains, and measure 4–6 × 1.5–2.5 μm and both form abundant

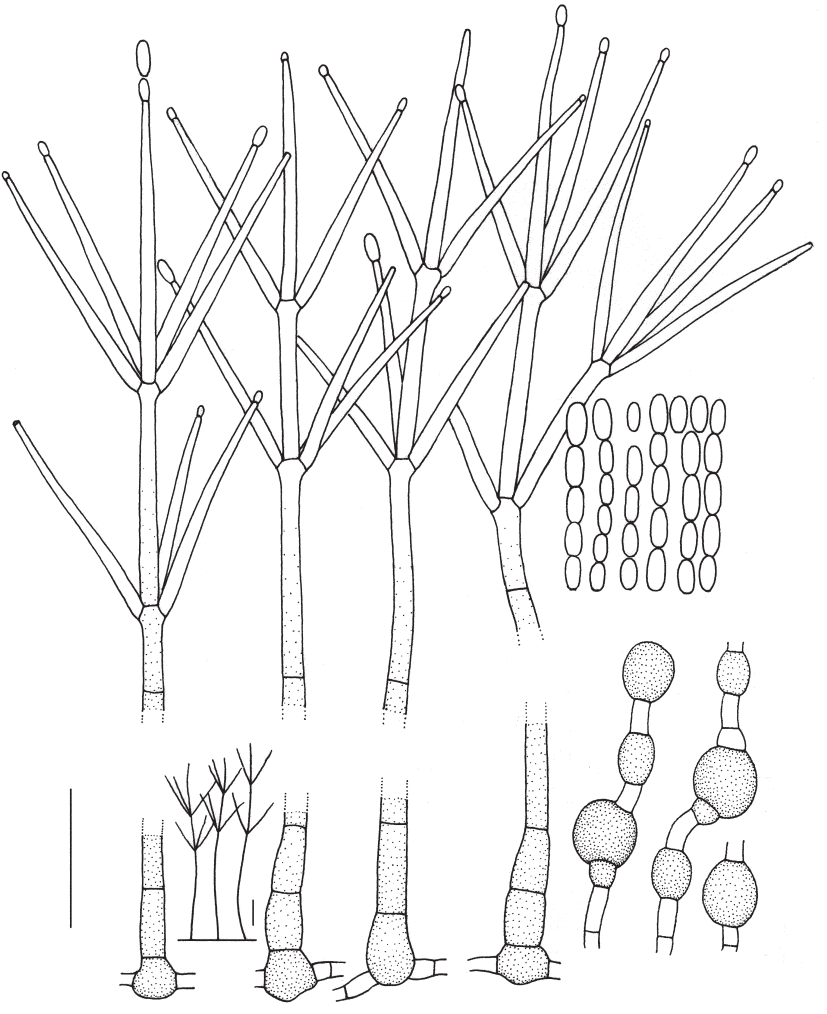

Fig. 2. *Gibellulopsis nigrescens* (HSAUP II $_{07}$1082).
Conidia, chlamydospores, conidiophores, and conidiogenous cells. Scale bars = 25 μm.

chlamydospores. We believe they are the same species. This is the only species known in the genus (Seifert et al. 2011).

Scopulariopsis canadensis F. J. Morton & G. Sm., Mycol. Pap. 86: 55 (1963) Fig. 3

Colonies on MA (malt agar) effuse, fuscous-black, velvety. Mycelium superficial or partly immersed, hyphae branched, septate, smooth, hyaline

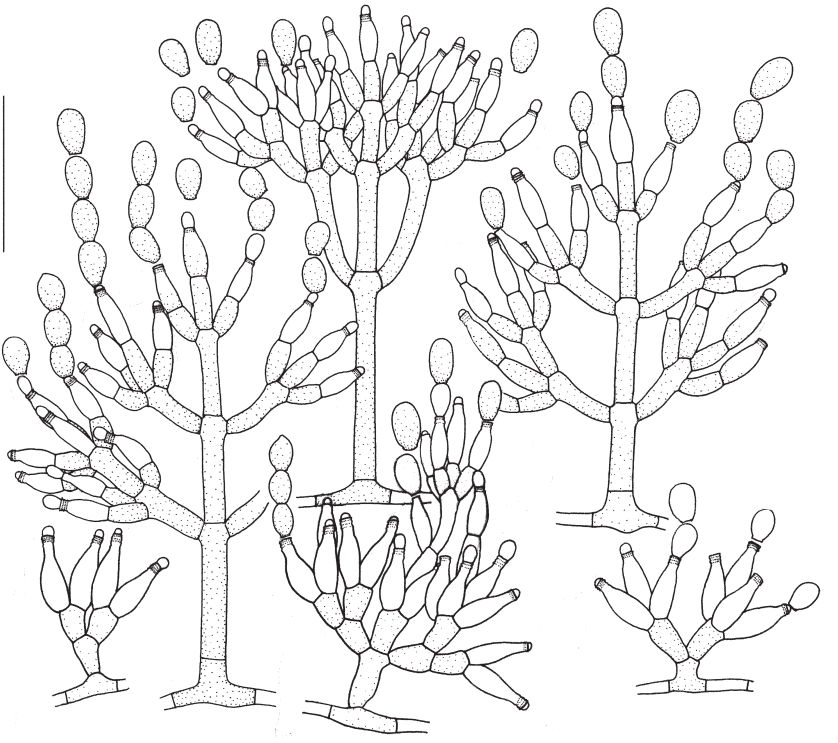

Fig. 3. *Scopulariopsis canadensis* (HSAUP II $_{07}$1481).
Conidia, conidiophores, and conidiogenous cells. Scale bar = 25 μm.

to pale brown, 1.5–2.5 μm wide. Conidiophores bearing annellophores in groups of 2–5 without metulae, or irregularly branched, pale brown, septate, smooth, 10–30 × 2.5–3.5 μm. Conidiogenous cells phialidic, terminal, smooth, hyaline, clavate or subulate, 8–15 × 3–6 μm. Conidia smooth, pale brown, ovate to oblong, with distinctly truncate base and rounded apex, often in chains, 0-septate, 6–8.5 × 4–5.5 μm.

Specimen examined: **China**. **Tibet**: Xigaze, from a grassland soil, altitude 4550 m, 20 Sept. 2007, Y.M. Wu (HSAUP II $_{07}$1481, HMAS 196277).

Scopulariopsis canadensis is reported for the first time from China. Compared with the descriptions by Morton & Smith (1963), both our specimens and the type have annellophores and pale brown conidia that are smooth, ovate to oblong, with distinctly truncate bases and rounded apices, often in chains, 0-septate, 6–8.5 × 4–5.5 μm. We believe they are the same species. In conidial shape, this species is most similar to *S. candida* (Vuillemin 1911), which differs in producing smaller (5–8 × 4–7 μm), and very pale conidia.

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Literature cited

Bainier G. 1907. Mycothèque de l'École de Pharmacie. XIV. *Scopulariopsis* genre nouveau de Mucédinées. Bull. Soc. Mycol. Fr. 23: 98–105.

Batista AC, H Da Silva Maia. 1959. Uma nova doenca fúngica de peixe ornamental. Anais Soc. Biol. Pernambuco. 16(1): 154–156.

Index Fungorum. 2012. http://www.indexfungorum.org/Names/Names.asp (accessed 17 Dec. 2012).

Kolařík M, Kubátová A, Čepička I, Pažoutová S, Šrůtka P. 2005. A complex of three new white-spored, sympatric, and host range limited *Geosmithia* species. Mycol. Res. 109(12): 1323–1336. http://dx.doi.org/10.1017/S0953756205003965

Morton FJ, Smith G. 1963. The genera *Scopulariopsis* Bainier, *Microascus* Zukal, and *Doratomyces* Corda. Mycol. Pap. 86: 1–96.

Pitt JI. 1979. *Geosmithia* gen. nov. for *Penicillium lavendulum* and related species. Can. J. Bot. 57: 2021–2030.

Pitt JI, Hocking AD. 1985. Interfaces among genera related to *Aspergillus* and *Penicillium*. Mycologia 77(5): 810–824.

Seifert K, Morgan-Jones G, Gams W, Kendrick B. 2011. The genera of hyphomycetes. CBS Biodiversity Series. CBS-KNAW Fungal Biodiversity Centre, Utrecht, Netherlands. 997 p.

Vuillemin P. 1911. Diffèrence fondementale entre le genre *Monilia* et les genres *Scopulariopsis*, *Acmosporium* et *Catenularia*. Bull. Soc. Mycol. Fr. 27: 137–152.

Zare R, Gams W, Starink-Willemse M, Summerbell RC. 2007. *Gibellulopsis*, a suitable genus for *Verticillium nigrescens*, and *Musicillium*, a new genus for *V. theobromae*. Nova Hedwigia 85(3–4): 463–489. http://dx.doi.org/10.1127/0029-5035/2007/0085-0463